

## ABSTRACT

A radio communication apparatus enabling reduction in peak-to-average power ratio without decreasing the transmission efficiency. In this apparatus, buffer  
5 section 103 temporarily stores input data prior to peak suppression. Peak detecting section 106 detects a peak with an amplitude level not less than a threshold. Peak cut section 107 reduces the detected peak to the threshold. Switching section 109 is switched so that the peak  
10 suppressed signal is output to FFT section 114 when the peak is detected, while the peak suppressed signal is subjected to transmission processing when the peak is not detected. Based on MCS information, signal recovering section 115 eliminates a signal assigned to  
15 a subcarrier set for MCS of a high level, and as a substitute, assigns the signal prior to peak suppression stored in buffer section 103. MCS setting section 116 selects MCS based on reception quality information of a communicating party.

## FIG.1 FIG.10

101-1 101-n CODING SECTION

INPUT DATA

102-1 102-n MODULATION SECTION

5 103 BUFFER SECTION

104 SWITCHING SECTION

105 IFFT SECTION

106 PEAK DETECTING SECTION

THRESHOLD INFORMATION

10 107 PEAK CUT SECTION

108 BPF SECTION

109 SWITCHING SECTION

110 D/A CONVERSION

111 AMPLIFYING SECTION

15 112 RF PROCESSING SECTION

## FIG.2

201 CONTROL COUNTER SECTION

202 CONTROL SIGNAL GENERATING SECTION

20 FROM MCS SETTING SECTION 116

203 INPUT BUFFER SECTION

FROM BUFFER SECTION 103

204 INPUT BUFFER SECTION

FROM FFT SECTION 114

25 206 OUTPUT BUFFER SECTION

TO SWITCHING SECTION 104

FIG.3

START

ST301 MCS SETTING

ST302 CODING • MODULATION

5 ST303 STORAGE IN BUFFER

ST304 IFFT PROCESSING

ST305 PEAK LEVEL  $\geq$  THRESHOLD  $\alpha$ ?ST306 PEAK CUT WITH THRESHOLD  $\beta$ 

ST307 BAND LIMITATION

10 ST308 FFT PROCESSING

ST309 RECOVERY

ST310 EXPAND A RANGE OF MCS TARGETED FOR PEAK CUT

ST311 TRANSMISSION

END

15

FIG.4

AMPLITUDE

THRESHOLD  $\alpha$ THRESHOLD  $\beta$ 20 AVERAGE LEVEL  $\gamma$ 

TIME

FIG.6~FIG.8 FIG.14~FIG.16

FREQUENCY

25

FIG.9

LOWER MCS

UPPER MCS

MODULATION SCHEME

CODING RATE

TRANSMISSION POWER

5 NORMAL

FIG.10

1001 PUNCTURING SECTION

1002 PEAK SUPPRESSION SIGNAL INSERTING SECTION

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FIG.11

1101 CONTROL COUNTER SECTION

1102 CONTROL SIGNAL GENERATING SECTION

FROM MCS SETTING SECTION 116

15 1103 INPUT BUFFER SECTION

FROM FFT SECTION 114

1105 OUTPUT BUFFER SECTION

TO PEAK SUPPRESSION SIGNAL INSERTING SECTION 1002

20 FIG.12

START

ST1201 MCS SETTING

ST1202 CODING • MODULATION

ST1203 STORAGE IN BUFFER

25 ST1204 IFFT PROCESSING

ST1205 PEAK LEVEL  $\geq$  THRESHOLD  $\alpha$ ?

ST1206 FFT PROCESSING

ST1207 PUNCTURING

ST1208 IFFT PROCESSING

ST1209 PEAK LEVEL  $\geq$  THRESHOLD  $\alpha$ ?

ST1210 EXPAND A RANGE OF MCS

5 ST1211 INSERTION OF PEAK SUPPRESSION SIGNAL

ST1212 TRANSMISSION

END